II. Rejection of Claim 42 Under 35 U.S.C. § 102(b)

Claim 42 is rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by McConnell et al., (U.S. Patent No. 4,795,497, hereinafter the '497 patent). Applicants traverse the rejection and request that it be withdrawn.

The '497 patent neither teaches nor suggests an apparatus for delivering ozone to the surface of a wafer via a film or layer of liquid solvent on the wafer surface, as recited in claim 42 of the present application. To the contrary, the '497 patent specifically teaches away from forming a film or layer of liquid solvent on the wafer surface. See, e.g., column 3, lines 13-21, wherein the '497 patent states that filming effects are to be avoided in semiconductor wet processing. See also, column 10, lines 42-49, wherein the '497 patent states that the treatment loop should be full, having no phase boundaries, "so that the fluid may circulate in a uniform fashion, without droplets, films or other irregularities which could degrade the wafer treatment process."

Similarly, the '497 patent fails to teach or suggest an apparatus for delivering ozone to the surface of a wafer via a film or layer of liquid solvent that comprises an inert transport medium that carries the ozone through the film to the wafer surface, as recited in the present claim 42. The liquid solvent recited in claim 42 acts as an inert transport medium to facilitate the physical contact of the ozone (or other reactant gas) with the wafer surface; the liquid solvent does not react with the wafer surface (see, e.g., page 4, lines 5-18 of the specification). The '497 patent discloses a wet treatment process for wafers (see, e.g., column 1, lines 28-29), that uses highly reactive liquid solvents such as sulfuric acid, ammonium hydroxide, hydrofluoric acid, and hydrochloric acid (see, e.g., column 13, line 48 through column 15, line 68).

For at least the foregoing reasons, claim 42 is allowable over the art of record.

III. Rejection of Claims 39-41, 43-48, and 50-56 Under 35 U.S.C. § 103(a)

Claims 39-41, 43-48, and 50-56 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the '497 patent in view of Moriyama, (U.S. Patent No. 5,143,552, hereinafter the '552 patent). Applicants traverse the rejection and request that it be withdrawn.

Claims 39-41, 43-48, and 50-56 themselves recite or depend from claims that recite an apparatus for delivering a reactive gas to the surface of a wafer via a film or layer of inert liquid solvent on the wafer surface. As discussed above in relation to claim 42, the '497 patent

specifically teaches away from forming a film or layer of liquid solvent on a wafer surface, and teaches the use of highly reactive liquid solvents rather than an inert liquid solvent. Moreover, the '497 patent does not teach or suggest an apparatus that maintains a wafer temperature at the dew point of a liquid solvent.

The '552 patent does not make up for the deficiencies of the '497 patent. The '552 patent does not teach or suggest (nor does the Examiner assert that the '552 patent teaches or suggests) delivery of a reactive gas to a wafer surface via a film or layer of inert liquid solvent. The '552 patent teaches a temperature/humidity control device that regulates the temperature and humidity of a vertical laminar flow of air supplied to a wafer coating apparatus (see, e.g., column 3, lines 56-63).

For at least the reasons discussed above in relation to claim 42, and the reasons set forth immediately above, claims 39-41, 43-48, and 50-56 are allowable over the art of record.

IV. Rejection of Claim 49 Under 35 U.S.C. § 103(a)

Claim 49 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the '497 patent modified by the '552 patent as applied to claim 39, and further in view of Bachman et al., (U.S. Patent No. 4,946,549, hereinafter the '549 patent). Applicants traverse the rejection and request that it be withdrawn.

Again, Applicants note that as discussed above under Sections II and III, the '497 patent and the '552 patent do not teach or suggest delivery of a reactive gas to a wafer surface via a film or layer of inert liquid solvent. The '549 patent does not make up for the deficiencies of the primary reference (the '497 patent) nor the secondary reference (the '552 patent). Furthermore, the '549 patent is not even relevant to claims 39 and 49.

The '549 patent teaches a plasma etching process which incorporates a gas mixture containing oxygen and a fluorocarbon gas (see, e.g., column 3, lines 42-56). The Examiner alleges that such teaching would make it obvious to one with ordinary skill in the art to use a perfluorocarbon to remove photoresist from a wafer (Office action, page 6). However, claim 49 recites a liquid solvent layer that is an inert transport medium for a reactant gas. The liquid solvent layer does not react with the photoresist material on the wafer surface (see, e.g., page 8, lines 19-25 of the specification). The '549 patent neither teaches nor suggests such an inert liquid solvent layer.

For at least the reasons discussed above, claim 49 is allowable over the art of record.

V. Conclusion

For the foregoing reasons, the claims in the present application are in condition for allowance and early notification to that effect is respectfully requested.

Respectfully submitted,

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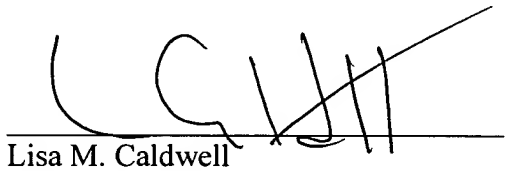
By 
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